

**Vallinayagam Sambantham, Ph.D**

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**Educational Qualifications**

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|-----------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B.Sc.,</b>                     | <b>1995</b> | <b>Major: Botany, Allied: Chemistry &amp; Zoology</b> - I Class with 75.6 %<br>St. Xavier's College (Autonomous), affiliated to Manonmaniam<br>Sundaranar University, Tamil Nadu, India.                                                                                          |
| <b>M.Sc.,</b>                     | <b>1997</b> | <b>Environmental Biotechnology</b> - I Class with 80.5% (University 2 <sup>nd</sup><br>rank) Manonmaniam Sundaranar University, Tamil Nadu, India                                                                                                                                 |
| <b>M.Sc.,</b>                     | <b>2017</b> | <b>Botany</b> - I Class with 65.07%<br>Bharathiar University, Tamil Nadu, India (studied through Distance<br>Learning Education programme)                                                                                                                                        |
| <b>D.I.P.C.,</b>                  | <b>1998</b> | <b>Diploma in Industrial Pollution and Control</b> - I Class with 71.5%<br>Annamalai University, Tamil Nadu, India (studied through<br>Distance Learning Education programme)                                                                                                     |
| <b>Ph.D.,</b>                     | <b>2003</b> | Manonmaniam Sundaranar University, Tamil Nadu, India.<br><br>Thesis title: <b>"Micropropagation of some rare and endangered ferns of<br/>the Western Ghats, South India"</b> .                                                                                                    |
| <b>Post-Doctoral<br/>Research</b> | <b>2005</b> | <b>Centre for Cellular and Molecular Biology (CCMB)</b> , CSIR Laboratory,<br>Hyderabad, Andhra Pradesh, India.<br><br>Project title: <b>"Characterization of a sex and species specific<br/>heterochromatic DNA transcript(s) expressed during<br/>spermatogenesis in man"</b> . |

**NET Qualification**

**Qualified National Eligibility Test (NET) in Environmental Sciences for Assistant  
Professorship / Lectureship** in the year 1999 conducted by **Agricultural Scientists  
Recruitment Board, Indian Council of Agriculture Research (ICAR), Govt. of India.**

**IT Skills**

- **Post Graduate Diploma in Computer Applications (PGDCA., 2000-2001)**, I Class  
with 71.25%, studied through part-time programme, Manonmaniam Sundaranar  
University, Tirunelveli, Tamil Nadu, India.
- **S\* online Bioinformatics course**, 2003, conducted by S\* Life Science  
Informatics Alliance, Singapore.

### Teaching and Research Experience – 20 years (Teaching – 12years; Research – 20 years)

- **Assistant Professor– Temporary**(since July 2018): **Department of Plant Science, Manonmaniam Sundaranar University**, Tamil Nadu, India.
- **Assistant Professor – UGC XII Plan**(August 2016 – March 2017): **Department of Environmental Management, School of Environmental Sciences, Bharathidasan University, Tiruchirappalli – 620 024**, Tamil Nadu, India.
- **Assistant Professor cum Programme Co-ordinator - Biotechnology Programme**(March 2012 - August 2015): **Faculty of Integrative Sciences and Technology, Quest International University Perak, Ipoh, Malaysia**.
- **Research Scientist**(January 2010 to June 2011): **Molecular Therapy Research Laboratory, Department of Clinical Research, Singapore General Hospital, Singapore**.
- **Research Scientist**(December 2008 -December 2009): **Immunology Laboratory, A\*STAR's Bioprocessing Technology Institute, Biopolis, Singapore**.
- **Research Professor – BK21 Fellowship**(February 2007 - February 2008): **Dept. Civil, Environmental and Architectural Engineering, Korea University, Seoul, South Korea**.
- **Lecturer**(December 2005 - December 2006): **Biological Sciences, Birla Institute of Technology and Science (BITS) - PILANI Goa Campus, Goa, India**.
- **Post-Doctoral Research Fellow** (June 2002 - November 2005): **Centre for Cellular & Molecular Biology (CCMB), CSIR Laboratory, Hyderabad, India**.
- **Senior Research Fellow**(November 1997 - 31 August 1998): **Fisheries College & Research Institute, Tuticorin, Tamil Nadu, India**.

### Projects handled

- Penyelidikan kolaborasi "Kajian Penyelidikan Tukan Tiruan Di Kedah 2014" (Artificial Coral Reef Management, Pulau Payar, Langkawi, Malaysia 2014), Antara Jabatan Perikanan Malaysia (Department of Fisheries) dan Quest International University Perak (QIUP) - MYR 100,000 (equivalent to INR 18,00,000/-).

### Training programmes / workshops attended

- **Training on Bioinformatics: From Basic to Advance, KAUSHALYA Programme**, 30 December 2024 – 10 January 2025, organized by **Gujarat Biotechnology Research Centre (GBRC), Gandhinagar, Gujarat**.
- **Malaysian Advanced Biorisk Officers Training (ABOT)** programme, 2013 conducted by **Malaysian Biosafety & Biosecurity Association (MBBA)** in collaboration with **Biosecurity Engagement Program, USA** - 8 weeks training programme organized as 4 modules in the year 2013; each module for 2 weeks, at **University Malaya, Kuala**

**Lumpur, Malaysia.**

- **Biological Safety in laboratory**, 16 - 17 December 2008 conducted by **Singapore Immunological Network (SiGN), Biopolis, ASTAR, Singapore.**
- **Biological Resource Centre: Responsible care & use of Laboratory Animals** course, 12 - 14 January 2009 conducted by **Biological Resource Centre, Biopolis, Singapore.**
- **Problem based Learning: Concepts and Processes**, 12 March 2013, organized by Medical Education Unit, Faculty of Medicine, **Quest International University Perak, Ipoh, Malaysia.**
- **Statistical Analysis using SPSS - Basics**, 19 December 2012, organized by **Quest International University Perak, Ipoh, Malaysia.**
- **Emotional Intelligence at Workplace**, 21 - 22 December 2012, organized by **Quest International University Perak, Ipoh, Malaysia.**
- **Constructing valid and reliable Multiple Choice Questions**, 19 July 2012, organized by Medical Education Unit, Faculty of Medicine, **Quest International University Perak, Ipoh, Malaysia.**
- **Chemoscience Technology Seminar 2012**, 11 July 2012, organized by **Chemoscience Sdn. Bhd, at Boulevard Hotel, Kuala Lumpur, Malaysia.**
- **Training on Gene Isolation, Sequencing & Sequence Analysis**, 15 - 27 October 2001 conducted by **M.S. Swaminathan Research Foundation, Chennai.**
- **Biotechnology summer training programme in Biochemistry, Microbiology, Molecular Biology and Plant Tissue Culture**, 15 May - 9 June 2000 conducted by **Centre for Biotechnology, SPIC Science Foundation, Chennai.**
- **Basic Techniques in Modern Biology**, 11 - 12 January 2000 organized by Department of Biotechnology, **Ayya Nadar Janaki Ammal College, Sivakasi.**
- **Techniques in Plant Tissue Culture**, 21 - 26 June 1999 conducted by Laboratory of Applied Biology, **St. Aloysius College, Mangalore.**

**Training programmes / Symposia / Seminar organized as an Executive Committee Member**

- **Two Days workshop on Forest Carbon Assessment**, 13 – 14 March 2025, organized by Department of Plant Science, **Manonmaniam Sundaranar University, Tirunelveli.**
- **National Conference on Revival of Millets in Our Diets**, 28 February 2023, organized by Department of Plant Science, **Manonmaniam Sundaranar University, Tirunelveli.**
- **National Workshop on Environmental Health and Safety Management 2017, 9-10 March**, organized by Department of Environmental Management, School of Environmental Sciences, **Bharathidasan University, Tiruchirappalli.**
- **International Seminar on Biology for sustainable Environment (ISBSE) - 2017, 7-8 March**, organized by Department of Environmental Biotechnology, School of Environmental Sciences, **Bharathidasan University, Tiruchirappalli.**
- **Biotechnology Symposium 2015, 20 June 2015**, organized by Faculty of Integrative Sciences & Technology, **Quest International University Perak, Ipoh, Malaysia.**
- **New Millennium Seminar on Medicinal Plant Cultivation: Problems, Practices & Marketing**, 3-5 February 2000, organized by Centre for Biodiversity and Biotechnology,

**St. Xavier's College, Tirunelveli.**

- Few training programmes on **Plant Tissue Culture Techniques**, 1998 -2001, organized by Centre for Biodiversity and Biotechnology, **St. Xavier's College, Tirunelveli.**

**Publications**

**Research articles Published in Journals**

- Banu JR, Yeom IT, Esakkiraj, Kumar N, Lee YW, **Vallinayagam S, 2008.** Biomanagement of sago-sludge using an earthworm, *Lampitoma mauritii*. **J. Environ Biol.** 29(5):753-757. (ISSN: 0254-8704)
- ZeenathJehan\*, **Vallinayagam S\***, Shrish Tiwari, Suman Pradhan, Lalji Singh, Amritha Suresh, Hemakumar M. Reddy, Ahuja YR and Rachel A. Jesudasan, **2007.** Novel non-coding RNA from human Y distal heterochromatin generates testis-specific chimeric CDC2L2, **Genome Research**, 17(4):433-440. (Impact Factor 14.63) (ISSN: 1088-9051)  
\* **Contributed equally to the work**
- Johnson M, **Vallinayagam S**, Manickam VS and Seeni S, **2003.** Micropropagation of *Rhinacanthus nasutus* (L.) Kurz. - A medicinally important plant, **Phytomorphology**, 52(4): 331-336. (ISSN: 0031-9449)
- Sivasubramanian S, **Vallinayagam S**, Raja D. Patric and Manickam VS, **2002.** Micropropagation of *Plectranthus vettiveroides* (Jacob) Singh and Sharma – A medicinal plant, **Phytomorphology**, 52(1): 55-59. (ISSN: 0031-9449)
- **Vallinayagam S**, Manickam VS and Seeni S, **2002.** Multiplication of *Diplazium cognatum* through *in vitro* culture, **Phytomorphology**, 52(1): 23-27. (ISSN: 0031-9449)
- Manikandavelu D, Jawahar P and **Vallinayagam S**, **2000.** Evaluation of photosynthetic stress as an index of pollution due to dye industries. **Journal of Environment and Pollution**, 7(3): 247-248.

**Book Chapter**

- **Vallinayagam, S, 2022.** *In vitro* propagation of *Histiopteris incisa* (Thunb.) J. Sm. – an ornamental fern, In (eds.) Johnson M, Helena Fernandez, Ashwani Kumar and Shibila T, *Ferns - Biotechnology, Propagation, Medicinal Uses and Environmental Regulation*, **Springer Nature Publishers**, Singapore, Pp – 243-248. (ISBN: 978-981-16-6169-3)
- Manickam VS, **Vallinayagam S** and Johnson M, **2003.** Micropropagation and conservation of rare and endangered ferns of the Southern Western Ghats through *in vitro* culture, In (eds.) Subhash Chandra and Mittunjai Srivastava, *Pteridology*

in New Millennium (Biology and Taxonomy of ferns), **Kluwer Academic Publishers**, The Netherlands, Pp - 497-504. (ISBN: 978-90-481-6222-2)

#### DNA sequences submitted to NCBI

- **AY 598346** - *Homo sapiens* partial Y chromosome heterochromatin.
- **AY 598347** - *Homo sapiens* partial Y chromosome heterochromatin.

#### Posters / Papers presented in Conference/Symposium

- **Vallinayagam S**, Kathirvel P, Shanthadevi U, Pao PW, Yee WC. “Correction of endogenous *SMN* transcripts by artificial *trans*-splicing molecules as therapeutic strategy for spinal muscular atrophy” - presented as a poster in Annual Scientific Meeting organized by SGH & NUS-DUKE Graduate Medical School, Singapore, 8 -9 April 2011.
- Chen CF, Rajik M, **Vallinayagam S**, Kathirvel P, Yee WC. “Antisense oligonucleotide mediated exon skipping to downregulate SOD1 expression via nonsense mediated decay- Proof-of-concept of a novel antisense strategy” - presented as a poster in Annual Scientific Meeting organized by SGH & NUS-DUKE Graduate Medical School, Singapore, 8-9 April 2011.
- Sejin Kim, **Vallinayagam S**, Seungkwan Hong and Young beom Yu, “A Novel Quorum Quenching Attempt To Control Biofouling on Reverse Osmosis Membranes at Laboratory Condition” for IWA Conference, Vienna, 7-12 Sept 2008.
- **Vallinayagam S**, Sreedevi B, Tiwari S, Lalji Singh and Rachel A.J, “Human testis cDNAs localize to the male specific Y (MSY) distal heterochromatic block” – presented poster in XXVII All India Cell Biology Conference & International Symposium, Frontiers in Biomedical Research & Technologies organized by Institute of Bioinformatics and Biotechnology & Zoology Department, University of Pune, 7-10 January 2004.
- Manickam VS, Antonisamy R, Sara CS and **Vallinayagam S**, “Conservation of rare and endangered ferns of the Palani hills in South Western Ghats of India through *in vitro* multiplication” in International Conference on Conservation of Tropical species, Communities and Ecosystem organized by BGCI & TBGRI, Thiruvananthapuram, India, 2-6 December 1998.
- **Vallinayagam S** and Sukumaran N, “Influence of Vitamin C on the humoral immune response of Tilapia, *Oreochromis mossambicus* (Peters) infected with *Pseudomonas* spp” in VIII International Conference on Diseases of Fish and Shellfish organized by European Association of Fish Pathologists, Edinburgh Conference Centre, Heriot-Watt University, Riccarton, Edinburgh, Scotland, 14-19 September 1997.

- **Vallinayagam S** and Sukumaran N, "Application of immunomodulators in aquaculture" in National Conference on Aquaculture (Confaqua'96) organized by Centre for Aquaculture Research and Extension, St. Xavier's College, Tirunelveli, 18-20 December 1996.

### **Summary of Research Accomplishments**

#### **Summary of Ph.D., research programme (September 1998 - June 2002)**

Ph.D., Supervisor: Rev. Dr. V.S. Manickam, S.J., Research Dept. of Botany, St. Xavier's College, Tirunelveli

Title: **"Micropropagation of some rare and endangered ferns of the Western Ghats, South India"**.

Some rare and economically important ferns (*Diplazium cognatum*, *Hypodematium crenatum*, *Pteris vittata* and *Histiopteris incisa*) from the Western Ghats region (one of the two well recognized Hotspots of India) were selected for *in vitro* multiplication. These ferns were micropropagated via *in vitro* spore culture, direct organogenesis through rhizome culture and indirect organogenesis through callus induction and differentiation. The micropropagated plants were re-established back in their native forest segments. In addition to my Ph.D work, I multiplied four rare and medicinally important plants also (*Exacum courtallense*, *Plectranthus vettiveroides*, *Rhinacanthus nasutus* and *Caesalpinia crista*) through tissue culture.

#### **Summary of Post-Doctoral Research work carried out at Centre for Cellular and Molecular Biology, Hyderabad, India (June 2002 - November 2005)**

Post-Doctoral Research Supervisor: Dr. A.J. Rachel, Scientist E3, CCMB, Hyderabad

Title: **"Characterization of a sex and species specific heterochromatic DNA transcript(s) expressed during spermatogenesis in man"**.

All the reported genes on the male specific region (MSY) of human Y chromosome localize to the short arm and euchromatic Yq region. No genes have been mapped to the distal heterochromatic block (Yq12) of long arm yet. We observed expression of a 2.189 kb sex and species specific genomic region [clone p102(d)2], which is a consensus of the pentameric GGAAT repeat from 36 weeks of gestation period onwards in human testis sections. Multi-tissue northern analysis showed testis-specific heterogeneous transcript (5-9 kb) in testis only. Human testis Phage cDNA library was screened using p102 (d) 2 as a probe. The resulted positive cDNA clones were further analyzed by Southern blot using human genomic DNA to identify male specific clones. Fluorescence *in situ* hybridization showed the localization of two of these cDNA clones on to the distal heterochromatic block (Yq12). These clones were showed testis-specific expression in multi-tissue northern analysis. These cDNA clones were sequenced, analysed using bio-informatics tools and submitted in the NCBI database (Accession Number AY 598346, AY 598347). These cDNA clones are not coding for any protein and considered as non-coding RNAs (ncRNAs). In our study, one of the ncRNA transcripts splices with *CDC2L2* gene (located on chromosome 1p36.3) and generates a testis-specific chimeric  $\beta$  sv13 isoform. In the  $\beta$  sv13

isoform, the 67-nt 5-UTR region harbouring a Y box protein-binding CCAAT motif, indicating translational regulation binding site derived from the Yq12 ncRNA. This work was published in **Genome Research**, April 2007, 17(4): 433-440 issue. [This article has been cited in Science, 2008, 321: 1357-1361; Nucleic Acids Research, 2009, 37(19): 6340-6354; Cell Cycle, 2009, 8(2): 218-222; Intl. J. Developmental Biology, 2009, 53:259-268; BMC Med Genomics, 2010, 3: 35-47; RNA Biol, 2013, 10(11):1689-1699 and Genome Research, 2013, 23: 1894-1907].

#### PERSONAL MINUTAE

Date of Birth	:	18.05.1975
Gender	:	Male
Category	:	General (Un-reserved)
Marital Status	:	Unmarried
Nationality	:	INDIAN
Extra-curricular Activities	:	N.C.C. (College level) & N.S.S. (School & College level)
Address	:	No.2, Vinayaga Avenue Rahmath Nagar Maharaja Nagar (Post) Tirunelveli - 627 011 Tamil Nadu, INDIA
Referee	:	Dr. P. Ravichandran Professor & Head Department of Plant Sciences Manonmaniam Sundaranar University Abishekapatti Tirunelveli - 627 012. INDIA Phone No. 9442640072 E' mail: grassravi@msuniv.ac.in
	:	Dr. R. Mohanraj Professor & Head Department of Environmental Management School of Environmental Sciences Bharathidasan University Tiruchirappalli – 620 024. INDIA Phone No. 9487158054 E' mail: mohan.bdu@gmail.com
	:	Dr. J. Rajesh Banu Professor & Head Department of Life Sciences Central University of Tamil Nadu Thiruvavur – 610005. INDIA Phone No. 9444215544 E' mail: rajeshces@gmail.com