

CURRICULUM VITAE

Dr. V.S. Periasamy M.Sc., Ph.D

Assistant Professor in Nano-Biotechnology
Nanobiotechnology and Cancer molecular biology research lab
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EXPERIENCES

2009– till date: **Assistant Professor:**

Co-investigator: *“In vitro toxicity evaluation of food and agricultural related nanoparticles on human primary and established cells”* a major R & D project funded by National Plan for Sciences and Technology (NPST-KACST), KSA.

Main objective: To find the toxicological effects (adhesion, cell death/apoptosis, intracellular trafficking, oxidative stress related signaling and gene expression) of engineering, food, personal care, cosmetics and agricultural related nanomaterials as well as safety issues of nanotechnology development and applications.

Major Role: (Establish and setting up of mammalian cell & tissue culture lab) Routine handling of Mammalian Cell tissue cultures (Primary and established cells) and molecular biology tools & techniques (flowcytometry, fluorescent microscopy and image analysis, qRT-PCR, microarray data analysis, and NGS data analysis).

2006 – 2009 **Senior Research Fellow**, (CSIR Project): **“Scientific validation of a Siddha medicine for cancer and drug discovery for CAM through reverse pharmacology”**. Dept. of Animal Science, Bharathidasan University. PI : Prof. M.A. Akbarsha.

2005 - 2006 **University Research Fellow: (Mammalian Cell culture lab and instruments maintenance)**, Dept. of Animal Science, Bharathidasan University. Guide : Prof. M.A. Akbarsha

2000- 2001 **Computer Operator:** Bridge & Roof (I) Ltd., A Govt. of India Enterprises, Karur, TN. Under : Mr. C. Balakrishnan, Resident Manager.

EDUCATIONS

- 2003 to 2010 **Ph.D., Biotechnology** Dept. of Animal Sciences, School of Life Sciences, Bharathidasan University, Tiruchirappalli – 620 024, TN, India
Thesis: “Screening of transition copper(II) complexes for cytotoxic property and ruthenium(II) complexes for use as intracellular fluorescent probes”. Guide : Prof. M.A. Akbarsha, Chair & Director Mahatma Gandhi-Doerenkamp Centre (MGDC) for Alternatives to Use of Animals in Life Science Education (In vitro Toxicology lab).
- 2001 to 2003 **M.Sc., Animal Biotechnology** (Ist class with distinction) Dept. of Animal Science, Bharathidasan University, Tamilnadu, India
Dissertation : “SSCP/PCR based Human AGT gene (Exon M235T & T174M) Mutation / Polymorphism analysis in Tamilnadu Population : Genome Analysis”. Advisor: Dr. G. Jayaraman, Co-ordinator, Molecular Biology Programme, Dept. of Genetics, PG Institute of Basic Medical Sciences, University of Madras, Chennai, India
- 1999 to 2000 **Certificate of Medical Laboratory Technician Course**, Dept. of Bio-Medical Lab. Technology, Vivekanandha Institute of Medical Science and Research, Thiruchenkodu, Tamilnadu, India (Medical Educations, Govt. of Tamilnadu, India)
Laboratory Techniques : Pathology, biochemistry and Microbiology.
- 1996 to 1999 **B.Sc., Zoology**(Ist Class), Dept. of Zoology, Govt. Arts and Science College, Karur, Tamilnadu, India. Group Project: Effect of zinc chloride on chick embryo development and image analysis.

CERTIFICATES

- 1997 **Dual Diploma in Computer**, Lakhotia Computer Centre, Karur, Tamilnadu, India
Subject : MS-Office, Foxpro, UNIX, C, C⁺⁺, LAN, SSAD
Self Learning : Java, Perl
- 1998 **Type Writing English** (Junior Grade – Ist Class), Govt. Technical Educations, Tamilnadu, India

MEMBERSHIP

Associate Member, The Cytometry Society, India

SPECIAL TRAININGS

- January 2013 - **European Molecular Biology Laboratory (EMBL) & European Bioinformatics Institute – “EBI-C-CAMB Next generation Genomics data analysis (NGS) workshop”.**
- June, 2011 - **European Molecular Biology Laboratory (EMBL) Heidelberg, Germany – Participant – Master course on “Target enrichment and next generation sequencing”**
- September, 2010 – **European Molecular Biology Laboratory (EMBL) Heidelberg, Germany – Advanced light microscopy Core facility – Visitor – A study on confocal microscopy & live imaging: Screening of methyl substituted Ruthenium complexes as intracellular fluorescent probes.**
- September, 2010 – **European Molecular biology laboratory (EMBL) Heidelberg, Germany – Participant - Techniques for the generation of transgenic mice in theory and practice. – Eppendorf training center.**
- July, 2008 - Institute of Bioinformatics and Applied Biotechnology, Bangalore, India **"A Modular Course in Cheminformatics"**
- January, 2008 – National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore, India – **“The first hands – on Basic Flow Cytometry Course”.** – Pande-Rath “First Prize winner”
- August, 2007 – Centre for Marine Science and Technology, MS University, Tamilnadu, India – **EMBO World Practical Course on “DNA Microarray: Analysis and applications”.**
- December 2005 Centre for Potential Genomic Sciences, Madurai Kamaraj University, Madurai , India– **“National workshop on "Microarray Techniques”.**
- January 2005 - PG Dept. of Zoology, Jamal Mohamed College, Tiruchirappalli, India **“Workshop on Immunological techniques”.**
- September 2004 - Dept. of Clinical Pharmacology, TN Medical College and BYL Nair Hospital, Mumbai, India – **“5th ICMR Training Course on Clinical Pharmacology of Traditional Medicine”.**
- August, 2004 - Dept. of Virology King Institute of Preventive Medicine, Chennai, India **“Workshop on Cell culture”.**

CONFERENCES (2009-2013)

- KACST, KSA - The Second International Nanotechnology conference and workshop (2SINC), Riyadh, KSA. 11-13, November, 2012.
- The Saudi International Biotechnology conference 2012 – Nanoscale materials for health technologies From Science and Engineering to clinical translation. 18-19, September, 2012.
- EMBO Conference Series - Chemical biology 2010, EMBL, Heidelberg, Germany. 22-25 September 2010 (Poster Presented).
- The 4th Medical Devices Scientific Forum (Saudi Medicare 2010) - Saudi Food & Drug Authority & Saudi Commission for Health Specialties. 12-15, April, 2010. (Participant)
- The international Conference for Nanotechnology Industries - King Abdulah Institute for Nanotechnology (KAIN) 5-7 April 2009. (Poster Presented)

TRAINER

Workshop trainer: December 2006, Dept. of Animal Science, Bharathidasan University, India “**Workshop on Molecular Tools in Animal Science Research**”

Co-guidance for M.Sc / M.Phil / B.Tech students: 11 M.Sc Animal Biotechnology / Biotechnology + 4 B.Tech biotechnology + 2 M.Phil students in the aspects of Anti-cancer drug discovery and *In vitro* cell biology

PUBLICATIONS

1. **V.S. Periasamy**, Jegan Athinarayanan, Ali A Alshatwi. 2013. Food-grade TiO₂ (E171) particles are taken up by and cause oxidative stress in human lung fibroblast cells. Chemicobiological interactions. (Under review)
2. Jegan Athinarayanan; **V.S. Periasamy**; Mohammed A Alsaif; Abdulrahman A Alwarthan; Ali A Alshatwi. 2013. Presence of nanosilica (E551) in commercial food products and its effects on cell viability, oxidative stress and gene expression in human lung fibroblast cells. Journal of Nanoparticle Research (Under review).
3. **V.S. Periasamy**, Jegan A, Mohammed A. Alsaif, Abdulrahman A Alwarthan, Ali A Alshatwi. 201. Effects of titanium dioxide nanoparticles isolated from confectionery products on the metabolic stress pathway in human lung fibroblast cells. Food and Chemical Toxicology (Under review).
4. Alhazmi MI, **Periasamy VS** and Alshatwi AA (2013). Down-regulation of GST and CAT gene expression by methanolic extract of *Nigella sativa* seed in human peripheral blood mononuclear cells. African Journal of Biotechnology. (Accepted).

5. Ali A Alshatwi, **V.S. Periasamy**, Pandurangan Subash-Babu, Mohammed A. Alsaif, Abdulrahman A Alwarthan, Lei KA. 2013. CYP1A and POR gene mediated mitochondrial membrane damage induced by carbon nanoparticle in human mesenchymal stem cells. 2013. *Environmental toxicology and pharmacology*. 36(1):215-22.
6. **V.S. Periasamy** and AA. Alshatwi. Tea polyphenols modulate antioxidant redox system on Cisplatin-induced ROS generation in a human breast cancer cell" 2012. *Basic Clinical Pharmacology and Toxicology*. 112(6):374-84.
7. AA. Alshatwi, **V.S. Periasamy**, E. Ramesh, A.A. Al-Hazzani, M.A. Alsaif, A.A. Alwarthan. Al₂O₃ nanoparticles induce mitochondria-mediated cell death and upregulate the expression of signaling genes in human mesenchymal stem cells" 2012. *Journal of Biochemical and Molecular Toxicology*. 26 (11):469-476.
8. AA. Alshatwi, **V.S. Periasamy**, E. Ramesh, A.A. Al-Hazzani, M.A. Alsaif, A.A. Alwarthan. Aluminum oxide nanoparticle induced mitochondrial mediated oxidative stress and altered the expression of antioxidant enzyme in human mesenchymal stem cells. *Food additives contaminants: Part A*. 2013. 30(1):1-10
9. Ali A. Alshatwi, E. Ramesh, **V.S. Periasamy**, P. Subash-Babu. The apoptotic effect of hesperetin on human cervical cancer cells is mediated through cell cycle arrest, death receptor, and mitochondrial pathways. *Fundamental & Clinical Pharmacology*. 2012. (Online). DOI: 10.1111/j.1472-8206.2012.01061.x
10. **Periasamy, V.S.** Subash-Babu, P. Muthukumaran, V.R. Akbarsha, M.A. Alshatwi, A.A. In Vitro Cytotoxic Effect of Formulated Semecarpus Ghee Nanoemulsion on Human Cervical Cancer (SiHa) Cells. *Advanced Science Letters*, Volume 6 2012 , pp. 75-79(5).
11. Venugopal Rajendiran, Mallayan Palaniandavar, **Vaiyapuri Subbarayan Periasamy**, Mohammad Abdulkader Akbarsha. New [Ru(5,6-dmp/3,4,7,8-tmp)₂(diimine)]₂ + complexes: Non-covalent DNA and protein binding, anticancer activity and fluorescent probes for nuclear and protein components. *Journal of Inorganic Biochemistry*. 2012: 116:151-62.
12. Anvarbatcha Riyasdeen, **Vaiyapuri S. Periasamy**, Preethy Paul, Ali A. Alshatwi, and Mohammad A. Akbarsha (2011). Chloroform Extract of Rasagenthi Mezhuagu, a Siddha Formulation, as an Evidence-Based Complementary and Alternative Medicine for HPV-Positive Cervical Cancers. (2012) *Evidence-Based Complementary and Alternative Medicine*. DOI:10.1155/2012/136527.
13. Amal Al-Hazzani, **Vaiyapuri Periyasamy**, Pandurangan Subash-Babu and Ali A. Alshatwi (2011). Formulation of cashew nut shell liquid (CSNL) nanoemulsion, a potent

- inhibitor of human MCF-7 breast cancer cell proliferation. *Medicinal Chemistry Research*. 2012; 21(7): 1384-1388.
14. Christo P Preethy, Ramamoorthy Padmapriya, **Vaiyapuri S Periasamy**, Anvarbatcha Riyasdeen, Suresh Srinag, Hanumanthappa Krishnamurthy, Ali A Alshatwi,, Mohammad A Akbarsha. (2011) Antiproliferative property of n-hexane and chloroform extracts of *Anisomeles malabarica* (L). R. Br. in HPV16-positive human cervical cancer cells. *Journal of Pharmacology and Pharmacotherapeutics*. 2012; 3(1):26-34.
 15. Ramakrishnan S, Palaniandavar M, **Periasamy VS**, Srinag BS, Krishnamurthy H, Akbarsha MA. (2011). Ternary Dinuclear Copper(II) Complexes of a Hydroxybenzamide Ligand with Diimine Co-ligands: 5,6-dmp Ligand Enhances DNA Binding and Cleavage and Induces Apoptosis. *Inorganic Chemistry*. 50(14):6458-71
 16. Kumar RS, **Periasamy VS**, Preethy CP, Riyasdeen A, Arunachalam S, Akbarsha MA. (2010) Cytotoxic effect of a polymer–copper(II) complex containing 2,2′-bipyridyl ligand on human lung cancer cells. *Medicinal Chemistry Research*. 20: 726 – 731.
 17. Rajendiran V, Palaniandavar M, **Periasamy VS**, Akbarsha MA. (2009). "[Ru(phen)2(dppz)]²⁺ as an efficient optical probe for staining nuclear components. *J Inorg Biochem*. 104: 217-220.
 18. Kumar RS, Arunachalam S, **Periasamy VS**, Preethy CP, Riyasdeen A, Akbarsha MA. (2009). Micellization Behaviour, DNA Binding, Antimicrobial, and Cytotoxicity Studies of Surfactant–Cobalt(III) Complexes Containing Di- and Tetramine Ligands. *Aust. J. Chem*. 62: 165–175
 19. Ramakrishnan S, Palaniandavar M, Rajendiran V, **Periasamy VS**, Srinag BS, Krishnamurthy H, Akbarsha MA. (2009). Induction of Cell Death by DNA Binding and Cleaving Ternary Copper(II) Complexes of L-tyrosine and Diimines: Role of Co-ligands on Anticancer. *Inorg Chem*. 48 (4), 1309–1322.
 20. Kumar RS, Arunachalam S, **Periasamy VS**, Preethy CP, Riyasdeen A, Akbarsha MA. (2008). Surfactant-Cobalt(III) Complexes: Synthesis, CMC Determination, DNA Binding, Antimicrobial and Cytotoxic studies. *J Inorg Biochem*. 103:117-127.
 21. Rajendiran V, Murali M, Suresh E, Palaniandavar M, **Periasamy VS**, Akbarsha MA. (2008). Non-covalent DNA binding and cytotoxicity of certain mixed ligand ruthenium(II) complexes of 2,2′-dipyridylamine and diimines. *Dalton Trans*. 16:2157-70
 22. Kumar RS, Arunachalam S, **Periasamy VS**, Preethy CP, Riyasdeen A, Akbarsha MA. (2007). DNA binding and biological studies of some novel water-soluble polymer-copper(II)-phenanthroline complexes. *Eur J Med Chem*. 43(10): 2082-2091

23. Faisal K, **Periasamy VS**, Sahabudeen S, Radha A, Anandhi R, Akbarsha MA. (2008). Spermatotoxic effect of aflatoxin B1 in rat: extrusion of outer dense fibres and associated axonemal microtubule doublets of sperm flagellum. *Reproduction*. 135: 303–310
24. Kumar RS, Arunachalam S, **Periasamy VS**, Preethy CP, Riyasdeen A, Akbarsha MA. (2008). Synthesis, DNA binding and antitumor activities of polymeric cobalt(III) complexes containing 1,10-phenanthroline ligand. *Polyhedron*. 27(3): 1111-1120.
25. Rajendiran V, Karthik R, Palaniandavar M, Stoeckli-Evans H, **Periasamy VS**, Akbarsha MA, Srinag BS, Krishnamurthy H. (2007). Mixed-ligand copper(II)-phenolate complexes: effect of coligand on enhanced DNA and protein binding, DNA cleavage, and anticancer activity. *Inorg Chem*. 46(20): 8208-21.
26. Faisal, K., Parveen, S., Rajendran, R., Girija, R., **Periasamy, V.S.**, Kadalmani, B., Puratchikody, A., Ruckmani, K., Pereira, B.M.J., and Akbarsha, M.A. (2006) Male reproductive toxic effect of *Quassia amara*: Observations on mouse sperm. *J. Endocrinol. Reprod.*, 10: 66-69.

PRESENTATIONS & ABSTRACTS

1. **Periasamy VS**, Rajendiran V, Karthik R, Palaniandavar M, , Srinag BS, Krishnamurthy H, Ali A Alshatwi, Akbarsha MA. [Ru(5,6-dmp/3,4,7,8-tmp)2(diimine)]²⁺ complexes : Quantitative cellular uptake, localization and cytotoxicity of in SiHa cervical carcinoma cells". EMBO Conference Series – Chemical Biology – September 22-25, 2010.
2. **Periasamy VS**, Preethy Paul C, Riyasdeen A, Srinag BS, Krishnamurthy H, Akbarsha MA. Synergistic effect of burcine and vitamin K on cancer cell lines. TCR2007. P25
3. Preethy Paul C, **Periasamy VS**, Riyasdeen A, Srinag BS, Krishnamurthy H, Akbarsha MA. Anisomeles malabarica R. Br. Ex Sins (Lamiaceae): A potential phytotherapy for cancer. TCR2007. P28.
4. Riyasdeen A, **Periasamy VS**, Preethy Paul C, Jahangir HS, Thajuddin N, Srinag BS, Krishnamurthy H, Akbarsha MA. Novel Streptomyces extracts as apoptosis inducers in cancer cell lines. TCR2007. P36.
5. HSJ Beegom, **VS Periasamy**, RS Ranga, R Girija, D Chendil, and MA Akbarsha Induction of Apoptosis in a Lung Cancer Cell Line by Plumbagin, International Symposium on Translational Research, December 18-21, 2005, RGCB, Trivandrum. p:61
6. Akbarsha MA, Faisal K, Girija R, **Periasamy VS**, Kadalmani B, Parveen S, Pereira BMJ. Observations on the male reproductive toxic effects of *Quassia amara*: light and TEM study in Swiss mouse. Therapeutic and Diagnostic Products for Reproductive Health: Recent Trends and Future Prospects, February 14-16, 2006, IIT Roorkee, Roorkee.

TECHNICAL SKILLS

- Experiences in setting up of mammalian cell culture laboratories with cutting-edge research facilities (fluorescent microscopy, flow-cytometry, real-time PCR work stations, western blot techniques and cryopreservation), and validation of the cell and tissue-culture based experiments.
- Cell culture (skills in routine cell culture lab maintenance, cell repository maintenance, experiences in handling and routine experimental work in the mammalian cell lines (Mesenchymal stem cells - Tert20, PC-12 (neuroepithelial bodies - hypoxia response), Hep-2, NCI-H460, HeLa-S3, ME-180, SiHa, NCI-H522, MDA-MB231, MCF-7, HBL-100, COS-7, 3T3, Jurkat, HepG2, IMR-90, WI-38, RPMI 1788, Detroit-573, CCD-18Co, CCD-841-CON, HEK-293, U-937, THP-1, THLE-2, Nuli-1, Human Embryonic stem cell lines, Primary vascular endothelial cells), cytotoxicity assays, apoptotic assays, cryopreservation methods, optimization of nutrient compositions, contamination identification and eradication, cross contamination identification and cell titration).
- Preclinical drug target screening and validation (cell death signaling and cancer) and multidrug combinational analysis (using Calcsyn software).
- Primary culture (Skills in protocol development and validation in primary culture system (mesenchymal stem cells, preadipocytes, skin fibroblast, germ cells from mouse embryo, leydig and sertoli cells cell isolation, identification and characterization), lymphocyte culture, CD maker analysis, micronucleus, comet assay, SNP genotyping and karyotyping).
- Assisted Reproductive techniques (PG specialization study): maintaining viability of gametes and embryos during processing; preparation of gametes for IVF, micromanipulation of gametes (ICSI); monitoring embryo development; embryo selection for transfer; embryo culture, transfer and cryopreservation.
- Molecular biology and biochemistry (skills in molecular biology sample preparation, extraction / isolation, protein purification, PCR, SSCP, SDS-PAGE, Western blotting and image analysis).
- Cell Biology (Flow cytometry-FACS CantoII, Morphometry-Carl Zeiss - Apoptome), Experience in developing and utilizing cell-based assays in *in vitro* cell models.
- Skills in fluorescent probe designing and labeling, and intracellular trafficking methods.
- Real Time PCR (AB 7500 Fast) (skills in SNP and expression analysis).

- Bionanomaterials synthesis, characterization and *in vitro* optimization.
- Analytical techniques (Spectroscopy, Preparative HPLC, column chromatography - protein and phytochemicals)
- Histopathology (skills in tissue preparation, processing, sectioning, staining, immunocytochemistry, handling of light, phase contrast, immunofluorescence, SEM and TEM microscopy and image analysis)
- Biomedical laboratory techniques in Pathology, Biochemistry and Microbiology.
- Biostatistics (skills in MS-Excel and SPSS software), bioinformatics and cheminformatics methods (skills in Quantitative Structure-Activity Relationship study, virtual screening, molecular modeling, docking) and drug combination studies using Calculusyn Software.
- Skills in PCR-SNP genotyping and mRNA expression analysis, microarray and Next generation Genomics (NGS) data analysis (variant calling and annotation – SNPs, Indels and CNVs) using R and BioConductor software.
- Computer skills: basic C++, R statistical programming, Javascript (web development), Photoshop, and Autodesk (maya 3D).