

Dr. Ayyavu. Mahesh,
Director,
Centre for Stem Cell and Cancer Genomics
AMI BioScience
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Professional Experience:

Research Experience : 16 years
Teaching Experience : 8 years of Genomics and Molecular Biology

- 9/2018-Till date : Founder and Director, AMIOmics, Coimbatore-04.
- 6/2016-Till date : Founder and Director, Centre for Stem Cell and Cancer Genomics, AMI BioScience, Coimbatore-04.
- 9/2011- 06/2016 : Assistant Professor, in DBT-IPLS Programme, (Center for Excellence in Genomics Sciences), School of Biological Sciences, Madurai Kamaraj University, Madurai-21
5 years of Teaching for M.Sc., Genomics & M.Sc., Biochemical technology
- 7/2011-9/2011 : Postdoctoral fellow, in the laboratory of **Prof. Rafael Perl-Treves**, The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University, Ramat-Gan 52900, Israel
- 1/2009-6/2011 : Postdoctoral fellow, in the laboratory of **Prof. Yedidiya Gafni**, Head Department of Plant Genetics, Agricultural Research Organization, The Volcani Centre, Bet-Dagan 50250, Israel

Awards and honours

- 2018-Till Date- BOS member for M.Tech and B.Tech, Department of Biotechnology, K.S.Rangasamy College Of Technology, Tiruchengode, Namakkal, Tamil Nadu 637215
- 2018- Till date- BOS member for M.Sc, Department of Zoology, PSGR Krishnammal College For Women, Coimbatore, Tamil Nadu 641004
- 2012- SERB-Young Scientist

- 2011- Konan Zoref Post- doc fellowship, Bar-Ilan University, Ramat-Gan, Israel
- University Research Fellow, Bharathidasan University, Tiruchirapalli, India (2005-2008)

Area of Interest

- Cancer Stem cell Biology
- Cancer Genomics and Proteomics
- Cancer Genome diagnostics and personalized medicine

Course handled at M. Sc., level (During 2011-2016)

M. Sc., Genomics : Cell Biology, Human Genomics and Genomics and Proteomics Practical's
 M. Sc., Biochemical Technology : Functional Genomics

Project details

S. No	Funding agency	Title	Amount In Rs:	Project Period	Project status
1	SEBR	Molecular cloning and expression of anticancer Sesquiterpene Lactone synthase from <i>Taraxacum officinale</i> .	24,70,000	2013-2016	Completed

Invited talk

1. Resource Person, Conference on “Big Data and Machine Learning in Biomedical and Health Informatics”: Contemporary uses and Prospective challenges” Department of Biotechnology, Faculty of Engineering, Karpagam University, Coimbatore-21.
2. Chief Guest and delivered talk in Biotechnology Association annual Inauguration Function, Department of Biotechnology, Karunya Institute of Technology and Sciences - Deemed University, Coimbatore- 641 114 (7th August 2018).
3. Chief Guest and delivered talk in inauguration of Sri Krishna Arts and Science College Academic Association activities for the year 2017-2018, Coimbatore
4. Chief Guest and delivered talk in Micro Taxon- 2015, organized by The Department of Microbiology, Jaya College of Arts and Science, Chennai- 602024 (February 16th, 2015)

5. Delivered talk in UGC- NRCBS 26th winter School on Plant Tissue culture, Organized by UGC-NRCBS, School of Biological Sciences, Madurai Kamaraj University (October 8-22, 2012)
6. Delivered talk in UGC- NRCBS ‘Onsite’ workshop on Advanced computational Genomics, Organized by UGC-NRCBS, SBS and Yogi Vemana University, Kadapa- 516 003, Andhra Pradesh (February 13-20, 2012)

Membership in scientific societies

- Life Member – Biotechnology Research Society of India (BRSI)
- Life Member – The Indian Science Congress Association

Workshop conducted (Duration 15 days)

- 1) **Dr. A. Mahesh, (convener)**. XXVIII-Winter School on “High Content Screening in drug discovery”. UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (November 28th – December 12th 2012).
- 2) Dr. R. Sripriya, (convener) and **Dr A Mahesh, (Organizing Secretary)**. XXV-Winter School on “Plant Genetic Engineering”. UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (September 3rd – 17th 2012).
- 3) Dr. K. Thangavel (convener) and **Dr A Mahesh, (Organizing Secretary)**. XXVI-Winter School on “Plant Cell Culture”. UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (Oct 8th – 22nd, 2012).

FACS- Short term hands-on training courses conducted

Courses Conducted

- 1) **Dr. A. Mahesh**, Convened “Flow Cytometry Workshop” DST-FIST Programme, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (September 1-3, 2015)
- 2) **Dr. A. Mahesh**, Convened “Flow Cytometry Workshop” DST-FIST Programme, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (February 18-20, 2015)
- 3) **Dr. A. Mahesh**, Convened “Flow Cytometry Workshop” DST-FIST Programme, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (March 5-7, 2013)

- 4) **Dr. A. Mahesh**, Convened “Flow Cytometry Workshop” DST-FIST Programme, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021. (January 28-31, 2013)

PUBLICATIONS

Peer reviewed Journal

*Corresponding author

Technical paper

1. **Mahesh, A.**, Levy, Y., Gaba, V. and Gafni, Y. 2015. Biolistic transformation of Tobacco plants using RCA-based (Rolling Circle Amplification) plasmid DNA isolated from single colonies of *Escherichia coli*. (*Under Linguistic editing*).
2. *Mohan Raj, R., Indhar Saidanyan, R., Chandrasekaran, S. and **Mahesh, A.** (2015) An Improved High resolution intact nuclei isolation protocol suitable for recalcitrant plant DNA content analysis using Flow Cytometry. (*Under Linguistic editing*).

Papers in Biomedical aspects

3. Kannan Narayanan Dhiraviam Manjula Devi Ramamoorthy, Ashok Kumar, Ayyavu Mahesh. (2018). Reserpine induces apoptosis and cell cycle arrest in hormone independent prostate cancer cells through mitochondrial membrane potential failure. *Anti-Cancer Agents in Medicinal Chemistry*. 18(9), 1313-1322. (IF: 2.556)
4. Tamilarasan Udhayabanu, Sellamuthu Karthi, Ayyavu Mahesh, Perumal Varalakshmi, Andreea Manole, Henry Houlden, Balasubramaniam Ashokkumar. (2017). Adaptive regulation of riboflavin transport in heart: effect of dietary riboflavin deficiency in cardiovascular pathogenesis. *Molecular and Cellular Biochemistry*, 440(1-2): 147-156. (IF: 2.669)
5. Gover Antoniraj M, Mahesh Ayyavu, Linda Jeeva Kumari Henry, Goutham Nageshwar Rao, Subramanian Natesan, D Sathish Sundar, Ruckmani Kandasamy. (2018). Cytocompatible chitosan-graft-mPEG-based 5-fluorouracil-loaded polymeric nanoparticles for tumor-targeted drug delivery. *Drug development and industrial pharmacy*, 44(3): 365-376. (IF: 2.295)
6. Sathish Sundar, Ayyavu Mahesh, M. Gover Antoniraj, Hanumant Singh Rathore, Nicolette Nadene Houreld, Ruckmani Kandasamy. (2018). Cellular Imaging and Folate Receptor Targeting Delivery of Gum Kondagogu Capped Gold Nanoparticles in Cancer Cells. *International Journal of Biological Macromolecules*, 109: 220–230. (IF: 3.671)
7. Gover Antoniraj, Angelin Tisha S, Ayyavu Mahesh Shanmugarathinama A, and Ruckmani Kandasamy. (2017). Synthesis and characterization of cystamine conjugated chitosan-SS-mPEG based 5-Fluorouracil loaded polymeric nanoparticles for redox responsive drug release. *European Journal of Pharmaceutical Sciences*, (Online Published) (IF: 3.756)
8. Albert Abhishek, Shaly Benita, Monika Kumari, Divya Ganesan, Eldho Paul, Ponnusamy Sasikumar, **Ayyavu Mahesh**, Subramani Yuvaraj, Tharmarajan

- Ramprasath and Govindan Sadasivam Selvam. (2017). Molecular analysis of oxalate-induced endoplasmic reticulum stress mediated apoptosis in the pathogenesis of kidney stone disease. *J Physiol Biochem*, DOI 10.1007/s13105-017-0587-8 (Online Published) (IF: 2.444)
9. Albert Abhishek, Vidhi Tiwari, Eldho Paul, Ganesan Divya, **Ayyavu Mahesh**, Ritu Kujur, Ponnusamy Sasikumar, Shanmugam Kathiresan, Luciano Saso, Govindan Sadasivam Selvam (2017). Expression of heterologous oxalate decarboxylase in HEK293 cells confers protection against oxalate induced oxidative stress as a therapeutic approach for calcium oxalate stone disease. *Journal Of Enzyme Inhibition And Medicinal Chemistry*, 32(1): 426-433 (IF: 4.293)
 10. Senthil Kumar C, **Ayyavu Mahesh**, M.Gover Antoniraj, S.Vaidevi and K.Ruckmani (2016). Ultrafast synthesis of stabilized gold nanoparticles using aqueous fruit extract of *Limonia acidissima* L. and conjugated epirubicin: targeted drug delivery for treatment of breast cancer. *RSC Advances*, 6:26874-26882. (IF: 3.840)
 11. Ganeshan Shakambari, Birendranarayan Anand Kumar, Maria Joseph Angelaa Lincy, Rai Sameer Kumar, Quazi Taushif Ahamed, Balasubramaniam Ashokkumar, Matheshwaran Saravanan, **Ayyavu Mahesh** and Perumal Varalakshmi. (2016) Hemocompatible glutaminase free L-asparaginase from a marine *Bacillus tequilensis* PV9W with anticancer potential modulating p53 expression. *RSC Advances*, 6: 25943-25951 (IF: 3.840)
 12. *Anand T, Sivaraman G, **Mahesh A** and Chellappa D. (2015). Aminoquinoline based highly sensitive fluorescent sensor for Pb^{2+} and Al^{3+} and its application in live cell imaging. *Analytica Chimica Acta*, 853: 596–601 (IF: 4.950)
 13. Gopalakrishnan Balakrishnan, Thangamuthu Rajendran, Krishnan Senthil Murugan, Mudedla Sathish Kumar, Veluchamy Kamaraj Sivasubramanian, Muniyandi Ganesan, **Ayyavu Mahesh**, Thiyagarajan Thirunalasundari, Seenivasan Rajagopal. (2015). Interaction of rhenium(I) complex carrying long alkyl chain with Calf Thymus DNA: Cytotoxic and cell imaging studies. *Inorganica Chimica Acta*, 434: 51–59. (IF: 2.046)
 14. Ranjani J, Pushpanathan M, **Mahesh A**, Niraimathi M, Gunasekaran P and Rajendhran J. (2015). Invasion of *Pseudomonas aeruginosa* PAO1 induces distinct mechanisms of cell death in H9C2 cells and its differentiated form. *Journal of Basic Microbiology*. 55:1-12. (IF: 1.822)
 15. Sathish Sundar D, **Mahesh A**, Surianarayanan M, Asit Baran Mandal. (2014). Synthesis and Characterization of Curcumin loaded Polymer/Lipid Based Nanoparticles and Evaluation of their Antitumor effects on MCF-7 Cells. *Biochimica et Biophysica Acta (BBA) - General Subjects*, 1840: 1913–1922. (IF: 4.702)
 16. *Iniya M, Jeyanthi D, Krishnaveni K, Mahesh A. and Chellappa D. (2014) Triazole based ratiometric fluorescent probe for Zn^{2+} and its application in bioimaging. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 120: 40–46. (IF: 2.1)

17. *Gobinath, S., **Mahesh, A.**, Muralidhara Rao, D. and Thangadurai, D. (2013). Hepatoprotective effect of *Caralluma umbellate* against acetaminophen induced oxidative stress and liver damage in rat. *Journal of Pharmacy Research*. 6(3): 342-345. (IF: 2.66)
18. *Sathish Climer, C., **Mahesh, A.**, Sinilal, B., Muralidhara Rao, D. and Thangadurai, D. (2012). Protective effect of *Indigofera aspalathoides* roots on N-nitrosodiethylamine induced hepatocarcinogenesis in mice. *Indian Journal of Pharmaceutical Sciences*, 74 (2): 157-160. (IF: 0.626)
19. ***Mahesh, A.**, Jeyachandran, R., Muralidhara Rao, D. and Thangadurai, D. (2012). Gastroprotective effect of *Desmodium gangeticum* roots on gastric ulcer mouse models. *Brazilian Journal of pharmacognosy*, 22(5): 1085-1091. (IF: 0.676)
20. *Vimaladevi, S., **Mahesh, A.**, Dhayanithi, N.B. and Karthikeyan, N. (2012). Mosquito larvicidal efficacy of phenolic acids of seaweed *Chaetomorpha antennina* (Bory) Kuetz. *Biologia*. 67(1): 212-216. (IF: 0.70)
21. ***Mahesh, A.**, Jeyachandran, R., Cindrella, L., Thangadurai, D. and Muralidhara Rao, D. (2010). Hepatocurative potential of sesquiterpene lactones of *Taraxacum officinale* on carbon tetrachloride induced liver toxicity in mice. *Acta Biologica Hungarica*, 61(2): 175–190. (IF: 0.793)
22. ***Mahesh, A.**, Shaheetha, J., Thangadurai, D. and Muralidhara Rao, D. (2009). Protective effect of Indian honey on acetaminophen induced oxidative stress and liver toxicity in rat. *Biologia*, 64(6): 1225-1231. (IF: 0.609)
23. Jeyachandran, R., **Mahesh, A.**, Cindrella, L., Sudhakar, S. and Pazhanichamy, K. (2009). Evaluation of antibacterial activity of plumbagin and the root extracts of *Plumbago zeylanica* L. *Acta Biologica Cracoviensia Series Botanica*, 51(1): 17–22. (IF: 0.586)
24. Jeyachandran, R., **Mahesh, A.** and Cindrella, L. (2007). DEN - induced cancer and its alleviation by *Anisomeles malabarica* (L.) R. Br. ethanolic leaf extract in male albino mice. *International Journal of Cancer Research*, **3(4)**: 174-179.

Papers in Plant Biology Aspects

25. **Mahesh Ayyavu**, Yael Levy and Yedidya Gafni. Production of siRNA targeted against ricin protein transcripts leads to inhibition of ricin expression in tobacco plants. *Archives of Environmental Contamination and Toxicology*, (*Under review*) (IF: 2.04)
26. ***Mahesh, A.** and Jeyachandran, R. (2013). Influence of plant growth regulators on *in vitro* flowering of *Trichodesma indicum* (Linn.) R. Br. *Plant Biosystems*, 147(2): 493-499. DOI: 10.1080/11263504.2012.727876 (IF: 1.912)
27. ***Mahesh, A.**, Thangadurai, D. and Melchias, G. (2012). Rapid *in vitro* plant regeneration from leaf explants of *Launaea sarmentosa* (Willd.) Schult- Bip. *Biological Research*, 45(2): 131-133. (IF: 1.1)

28. ***Mahesh, A.** and Jeyachandran, R. (2011). *Agrobacterium rhizogenes*-mediated hairy root induction in *Taraxacum officinale* and analysis of sesquiterpene lactones. *Plant biosystems*, 145(3): 620-626. (IF: 1.912)
29. Jeyachandran, R. and **Mahesh, A.** (2007). *Agrobacterium rhizogenes* mediated hairy root induction in *Oxystelma esculentum* (L.f). R. Br. *Journal of Biological Research*, 8: 207- 212. (IF: 0.682)

Book chapters

1. Kapil Sanjay Sharma, Lakkshmi Prabha Venkatasubramani, Kavya Prasad, Bhamare Amruta Nitin, Ayyavu Mahesh. (2020). MarinOmics- Current and Future Perspectives. In: "Marine Niche: Applications in Pharmaceutical Sciences - Translational Research" (Ed) Chandra Shekar Mootapally, Springer Nature, London (In Press)
2. Aathira Maikkara, Samiha Tabassum Ghori, Vishaalini Kamali Raja, **Ayyavu Mahesh.** (2017). "OMICS" techniques- Applications and future perspective, , In: Encyclopedia of Marine Biotechnology, (Vol, 2), Se-Kwon Kim(ed), John Wiley & Sons, New Jersey, United States (In Press)
3. Samiha Tabassum Ghori, Vishaalini Kamali Raja, Uthira Muralitharan, Aathira Maikkara, **Ayyavu Mahesh.** (2017). Marine Biopharmaceuticals- A retrospective on molecular mechanisms, In: *Encyclopedia of Marine Biotechnology*, (Vol, 3), Se-Kwon Kim (ed), John Wiley & Sons, New Jersey, United States, (In Press)
4. **Mahesh, A.** and Thangadurai, D. Transformed hairy root induction: a tool for enhancement of secondary metabolites in *Taraxacum officinale*. In: Thangadurai D *et al.*, (eds), *Molecular Agrobiology*, (In Press)
5. *Meganathan, B. and **Mahesh, A.** (2015). Seaweed Carotenoids for Cancer Therapeutics. In: *Handbook of Anticancer Drugs from Marine Origin*, Kim SK (ed), Springer International Publishing Switzerland, pp. 185-203. (ISBN 978-3-319-07144-2)
6. Jeyachandran R., **Mahesh, A.** and Cindrella L. (2010). Glucosamine- a novel medicine for Arthritis. In: *Role of Biotechnology in Medicinal and Aromatic plants*, Vol- XXI, Ali Khan, I. and Khanum, A (eds). Ukaaz publications, Hyderabad. 246-272 (ISBN 81-88279-58-7)
7. Jeyachandran, R., **Mahesh, A.** and Cindrella, L. (2010). Epidemiology of Hot water epilepsy. In: *Role of Biotechnology in Medicinal and Aromatic plants*, Vol- XXI, Ali Khan, I. and Khanum, A (eds). Ukaaz publications, Hyderabad. Pp 273-296 (ISBN 81-88279-58-7)
8. ***Mahesh, A.**, Jeyachandran, R., Cindrella, L. Thangadurai, D. and Pinheiro de Carvalho, M.A.A. (2008). Phytochemical, Pharmacological and Tissue Culture Studies on *Taraxacum officinale* Weber (Asteraceae). In: *Biotechnology for food, Environment and Agriculture*, Vol. I. Thangadurai, D. (eds.), Agrobios Press, India. pp. 235-251. (ISBN 81-7754-349-0)

9. Jeyachandran, R., **Mahesh, A.** and Cindrella, L. (2008). Hepatoprotective Medicines, In: *Role of Biotechnology in Medicinal and Aromatic plants*, Vol- XIX. Ali Khan, I., Khanum, A. and Ahad khan, A. (eds). Ukaaz publications, Hyderabad. pp 114-142. (ISBN 81-88279-52-8)
10. Jeyachandran, R., **Mahesh, A.** and Cindrella, L. (2008). Nephroprotective Plant Medicines, In: *Role of Biotechnology in Medicinal and Aromatic plants*, Vol- XIX. Ali Khan, I., Khanum, A. and Ahad khan, A. (eds). Ukaaz publications, Hyderabad. pp 143-168. (ISBN 81-88279-52-8)
11. Jeyachandran, R., **Mahesh, A.**, Krithika, G and Cindrella, L. (2008). Immunotoxicology, In: *Role of Biotechnology in Medicinal and Aromatic*, Vol- XX. Ali Khan, I., Khanum, A. and Ahad khan, A. (eds). Ukaaz publications, Hyderabad. pp 262-290. (ISBN 81-88279-53-6)
12. Jeyachandran, R., **Mahesh, A.** and Cindrella, L. (2008). Pathogenesis of Poliomyelitis. In: *Herbal Medicine for Human Diseases*, Vol- IV. Ali Khan, I. and Khanum, A. (eds). Ukaaz publications, Hyderabad. pp 271-296. (ISBN 81-88279-55-2)

Laboratory manual

1. High Content Screening in drug discovery, 28th -Winter School, UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021.
2. Plant Genetic Engineering. 25th- Winter School, UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021.
3. Plant Cell Culture. 26th- Winter School, UGC-NRCBS-MKU, School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021.

Abstract published in Conferences at International / National level: 48

Participated in Seminars at International and National level: 18

Academic excellence/ honors:

- *Reviewer*, Natural Product research, Wiley-Blackwell Publications (Since 2010)
- *Reviewer*, Human and Experimental Toxicology (Since 2011)
- *Reviewer*, Journal of Pharmacy and Pharmacology, Wiley-Blackwell Publications (Since 2010)
- *Reviewer*, Pharmaceutical Biology, Taylor & Francis Publications (Since 2008)