Dr. Anbarasu Karthikaichamy Ph.D.

Postdoctoral Research Associate
School of Marine and Atmospheric Sciences (SoMAS)
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EDUCATION

2014 – 2019 **Ph.D.**, IITB-Monash Research Academy (joint Ph.D. program) *CGPA* 9.2/10
Thesis**:** *"Molecular Plasticity of Microalgal Stress Response"*
- Studied physiology of microalgae under hyper-saline conditions
- Employed RNA-seq and proteomics to identify salinity response genes and proteins

Supervisors: *Santosh Noronha (IIT Bombay), Dieter Bulach (Monash University), Sanjeeva Srivastava (IIT Bombay), Ross Coppel (Monash University) and Tomal Dattaroy (Reliance Industries Limited)*

2011 – 2013 **M.Tech.**, Biopharmaceutical Technology, Centre for Biotechnology, Anna University, Chennai, India *CGPA* 9.5/10

2007 – 2011 **B.Tech.**, Biotechnology, Mepco Schlenk Engineering College, Sivakasi, India 84%

APPOINTMENTS

08.2019 – present **Postdoctoral Research Associate**, SoMAS, Stony Brook University, NY, USA
Gordon and Betty Moore Foundation initiative on *"Developing Aurantiochytrium as an experimental model system (EMS)"*
KO generation using CRISPR/Cas9 | *Molecular toolkit* | *Bothrosome dynamics* | *Comparative mitogenome analysis* |

01.2016 – 05.2016
07.2015 – 11.2015
01.2014 – 11.2014
Graduate Teaching Assistant, Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai, India
Conducted lab sessions on distillation, heat transfer and enzyme kinetics for Chemical Engineering Undergraduate students at IIT Bombay, India.

08.2011 – 05.2013 **Master Student Research Assistant**, Tissue Culture and Drug Discovery Lab, Centre for Biotechnology, Anna University, Chennai, India
Thesis: *"Significance of mTOR and c-Src in estrogen mediated breast cancer signalling"*

12.2010 – 04.2011 **Bachelor Student Research Assistant**, Gene Expression Lab, Mepco Schlenk Engineering College, Sivakasi, India
Thesis: *"Evolution of the RNase P RNA structural domain in Leptospira spp."*

HONORS

2021 Awarded SoMAS Dean's Seed Grant - Stony Brook University ($30,000)
2019 Best Ph. D thesis award nomination – institute level
2018 Best 3 Minute Thesis Talk (Dept. of Chemical Engineering, IIT Bombay)
2017 Awarded Travel Grant (MGE, Monash University) to attend 11th IPC, Szczecin, Poland (A$2150)
2016 Awarded Travel Grant (IITB-Monash Research Academy) to attend 10th ABO summit, Phoenix, USA ($1500)
2014 Gold medal for Highest CGPA in M. Tech Biopharmaceutical Technology from Anna University, Chennai
2012 Awarded Lectureship (36th rank) by Council of Scientific and Industrial Research (CSIR), Government of India

GRANTS & FUNDING

"A unique organelle at the interface of the carbon cycle and marine food webs"
SoMAS Dean's Seed Grant, Stony Brook University ($30,000) to study the bothrosome composition and dynamics in *Aurantiochytrium limacinum*. January 2021.

SKILLS

Expertise in molecular cloning and algal physiology; Experience in genetic toolkit development and knock-out generation using CRISPR/Cas9; Skilled in generating and analysing large OMICS (RNA-seq and proteomics) datasets; Comparative genomics; Working knowledge in R (statistical, phylogenetic, and plotting packages); Excellent knowledge in microscopy techniques (light and fluorescence microscope), spectrometry (HR-LC/MS, FT-IR, FT-NIR, fluorescence and PAM fluorometer).

PUBLICATIONS [ORCID 0000-0002-1789-6566]

Karthikaichamy A, Srivastava S, Coppel R, Beardall J, Noronha S, Bulach D. 2020. Temporal transcriptome profiling of *Microchloropsis gaditana* CCMP526 under hyper-saline conditions. *bioRxiv*. DOI: 10.1101/2020.06.07.139238 (***Pre-print***)

Karthikaichamy A, Beardall J, Coppel R, Noronha S, Bulach D, Schittenhelm R. B, & Srivastava S. 2020. A Data-Independent-Acquisition-based proteomic approach towards understanding the acclimation strategy of *Microchloropsis gaditana* CCMP526 in hypersaline conditions. *bioRxiv*. DOI: 10.1101/2020.03.18.996223 (***Pre-print, in review:*** *Renewable Energy, Jan 2021*)

Deore P, **Karthikaichamy A**., Beardall J., & Noronha S. 2020. Non-photochemical quenching, a non-invasive probe for monitoring microalgal grazing: an early indicator of predation by *Oxyrrhis marina* and Euplotes sp. *Applied Phycology*, 1(1), 20-31. DOI: 10.1080/26388081.2019.1651218

Karthikaichamy A, Deore P, Srivastava S, Coppel R, Bulach D, Beardall J, Noronha S. 2018. Temporal acclimation of *Microchloropsis gaditana* CCMP526 in response to hypersalinity. *Bioresource Technology*. 254. DOI: 10.1016/j.biortech.2018.01.062

Karthikaichamy A, Deore P, Rai V, Bulach D, Beardall J, Noronha S, Srivastava S. 2017. Time for Multiple Extraction Methods in Proteomics? A Comparison of Three Protein Extraction Methods in the Eustigmatophyte Alga *Microchloropsis gaditana* CCMP526. *Omics: A Journal Of Integrative Biology*. 21. DOI: 10.1089/omi.2017.0128

Rai V., **Karthikaichamy A**., Das D., Noronha S., Wangikar P.P. and Srivastava S., 2016. Multi-omics frontiers in algal research: Techniques and progress to explore biofuels in the postgenomics world. *OMICS: A Journal of Integrative Biology*, *20*(7), pp.387-399.

Ambrose, H.W., Philip, L., Suraishkumar, G.K., **Karthikaichamy, A**. and Sen, T.K., 2020. Anaerobic co-digestion of activated sludge and fruit and vegetable waste: Evaluation of mixing ratio and impact of hybrid (microwave and hydrogen peroxide) sludge pre-treatment on two-stage digester stability and biogas yield. *Journal of Water Process Engineering*, *37*, p.101498.

Ravishankar V, Ahmed A, Sivagnanam U, Muthuraman K, **Karthikaichamy A**, Wilson HA, Devendran A, Hartskeerl RA, Raj SM. 2014. Evolution of the RNase P RNA structural domain in Leptospira spp. *Research In Microbiology*. 165. DOI: 10.1016/j.resmic.2014.10.007

In preparation for submission:

Karthikaichamy A, Deore P, Bulach D, Noronha S, Heraud P and Beardall J. 2021. Probing the biomolecular perturbations in salinity stressed *Microchloropsis gaditana* CCMP526 using FT-IR (in preparation for submission).

Karthikaichamy A, Rest J and Collier L. 2021. Comparative analysis of labyrinthulomycete mitogenome reveals evolution of codon usage and organellar gene transfer (in preparation for submission).

CONFERENCES & SEMINARS

Karthikaichamy A, J Rest and J Collier. Poster presentation at the Online Session on Protists, International Society for Protistologists (ISOP) and International Society for Evolutionary Protistology (ISEP), August, 2020. "*Molecular tools for a marine protist*"

Karthikaichamy A, Deore P, Srivastava S, Coppel R, Bulach D, Beardall J, Noronha S. Poster presentation at the 11th International Phycological Congress, Szczecin, Poland, August, 2017. *"Temporal Acclimation of Nannochloropsis gaditana CCMP526 in Response to Hyperosmolarity"*

Karthikaichamy A, Rai V, Deore P, Noronha S, Dasgupta S Srivastava S. Poster presentation at the 10th Algal Biomass Organisation summit, Phoenix, AZ, USA. October, 2016. *"Increasing Proteome Coverage in Nannochloropsis gaditana CCMP526"*

Karthikaichamy A. Participated in Indo-US workshop on *"Cell Factories"*. Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai, India. March, 2016.

Karthikaichamy A. Participated in the workshop at the 23rd National Congress of Parasitology. Centre for Biotechnology, Anna University, Chennai, India. November, 2011.

PUBLIC DATASETS

Anbarasu Karthikaichamy and Jackie Collier. CRISPR/Cas9 based knockout generation in *Aurantiochytrium limacinum* (ATCC MYA-1381). Protocols.io. December 2019. DOI: 10.17504/protocols.io.baeyibfw

Anbarasu Karthikaichamy and Jackie Collier. Synthetic media (A1) for *Aurantiochytrium limacinum* (ATCC MYA-1381). Protocols.io. December 2019. DOI: 10.17504/protocols.io.bafuibnw

Anbarasu Karthikaichamy and Jackie Collier. Ectoplasmic Net (EN) formation in *Aurantiochytrium limacinum* (ATCC MYA-1381). Protocols.io. March 2020. DOI: 10.17504/protocols.io.bc7hizj6

Anbarasu Karthikaichamy. Protein extraction form *Aurantiochytrium limacinum* (ATCC MYA-1381). Protocols.io. March 2020. DOI: 10.17504/protocols.io.bc7gizjw

Mass spectrometry proteomics data deposited to the ProteomeXchange Consortium with the dataset identifier PXD017297, PXD017164. Project name: A Data-Independent-Acquisition-based proteomic approach towards understanding the acclimation strategy of *Microchloropsis gaditana* CCMP526 in hypersaline conditions. January 2020.

Sequence (partial) of RNaseP RNA subunit (rnpB) gene of 18 Leptospiral serovars submitted to NCBI GenBank. April 2015. Published in DOI: 10.1016/j.resmic.2014.10.007.

TEACHING & MENTORSHIP

2019 – 2020 Research Mentor of Xegfred Lou T. Quidet, Interdisciplinary Biology undergraduate at Stony Brook University. Studies on vitamin B dependency in *Aurantiochytrium limacinum*.

SERVICE

2017 – 2018 **Publication Database Maintenance**
Involved in periodical updating and analysing IITB-Monash Academy's publication database.

2016 **In-charge for setting up Biology Lab at IITB-Monash Academy's new building**
Involved in designing, cost-comparison and procurement of lab wares and analytical instruments.

2015 **Co-ordinator, Indo-French seminar on *"Futuristic Approach to Alternatives"*, IIT Bombay**

2015 **Design Manager, ResCon'15, Indian Institute of Technology Bombay, Mumbai, India**
Conceptualized and co-ordinated the design requirements for the annual Research Scholars Confluence at IIT Bombay.

2014 **Records and Laboratory Maintenance Assistant**
Undergrad lab, Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai, India. In-charge for routine collection of students' assignments, final grading, and lab maintenance.