

Evolutionary Biology & *Reef Ecology Laboratories
Department of Biological Sciences
National University of Singapore
*based in REL at of 2016

Email: zeamne (at) gmail.com ;
yweechieh (at) nus.edu.sg
Mobile: +65 97277056



TAY Ywee Chieh

Research Interests

I am interested in various aspects of molecular ecology, particularly in population genetics, and the discovery, conservation, and assessment of biodiversity. In recent years, I have been exploring these aspects with the power of high-throughput DNA sequencing. I also have a keen interest in developing molecular methods to enhance research in these areas.

Educational Qualifications

National University of Singapore

(Dec 2012)

PhD. Thesis title: Connectivity of Coral Populations within the Singapore Strait

Received the World Future Foundation PhD Prize in Environmental Sustainability Research

National University of Singapore, Science Faculty

(June 2006)

BSc. (Hons) in Life Sciences – First Class

Cumulative Average Point (CAP): 4.63/5.00

Professional Experience

Evolutionary Biology Laboratory & Reef Ecology Laboratory, NUS

– Postdoctoral Research Fellow

(Jan 2016 – present)

Research projects:

- Population genomics of marine species
- DNA barcoding of marine fauna
- Metabarcoding of environmental DNA to assess species diversity, as biomonitoring tools

Evolutionary Biology Laboratory, NUS – Postdoctoral Research Fellow (Mar 2013 – present)

Research projects:

- Population genetics and genomics of freshwater and marine fauna
- Metabarcoding of environmental DNA in freshwater reservoirs
- DNA barcoding of the Nee Soon Swamp Forest

Tropical Marine Science Institute, NUS – Research Assistant

(Jun 2012 – Feb 2013)

Comprehensive Marine Biodiversity Survey

General role and Duties:

- Sampled and managed tissues for cryogenic collection
- Field surveys involving intertidal specimen collections and dredging
- Taxonomic identification of cephalopods

Department of Biological Sciences, NUS – Research Assistant

(Mar 2011 – Jun 2012)

Impacts of climate change on the biodiversity in Singapore

General role and Duties:

- As part of a team, compiled a checklist of Singapore's marine biodiversity and investigated the potential impacts of climate change on the biodiversity through literature reviews and model predictions.

Publications

Lim, N., **Tay, Y.C.**, Srivathsan, A., Tan, J., Kwik, J., Baloglu, B., Meier, R., Yeo, D. (in review). Next-generation freshwater bioassessment in the tropics: eDNA reveals high species richness and reservoir-specific species communities.

Tay, Y.C., Chng, M.W.P., Sew W.W.G., Rheindt F.E., Tun, K.P.P. & Meier, R. 2016. Beyond the Coral Triangle: High genetic diversity and near panmixia in Singapore's populations of the broadcast spawning sea star *Protoreaster nodosus*. *R. Soc. open sci.*, 3: 160253. DOI: 10.1098/rsos.160253.

Fautin, D.G., Tan, R., Yap, N.W.L., Tan, S.H., Crowther, A., Goodwill, R., Sanpanich, K. & **Tay, Y.C.** 2015. Sea anemones (Cnidaria: Actinaria) of Singapore: shallow-water species known also from the Indian subcontinent. *Raffles Bulletin of Zoology*, 44–59.

Tay, Y.C., Noreen, A.M.E., Suharsono, Chou, L.M. & Todd, P.A. 2015. Genetic connectivity of the broadcast spawning reef coral *Platygyra sinensis* on impacted reefs, and the description of new microsatellite markers. *Coral Reefs*, 34(1): 301–311. DOI 10.1007/s0033801412066

Wong, W.H., **Tay, Y.C.**, Puniamorthy, J., Balke, M., Cranston, P.S. & Meier, R. 2014. 'Direct PCR' optimization yields a rapid, cost-effective, nondestructive and efficient method for obtaining DNA barcodes without DNA extraction. *Molecular Ecology Resources*. DOI: 10.1111/17550998.12275

Chou, L.M., Toh, K.B., **Tay, Y.C.** & Phang, V.X.H. 2012. Coral reefs in Singapore: Past, present and future. *Proceedings of the Asian Conference on Sustainability, Energy and the Environment*. pp. 431–436.

Toh, K.B., Chou, L.M., **Tay, Y.C.** & Phang, V.X.H. 2012. The impacts of climatic extremes on coastal and marine biodiversity in Singapore and management challenges. *Proceedings of the Asian Conference on Sustainability, Energy and the Environment*. pp. 423–430.

Tay, Y.C., Todd, P.A., Per, S.R. & Chou, L.M. 2012. Simulating the transport of coral larvae among the Southern Islands of Singapore. *Aquatic Biology*, 15(3): 283–297.

Tay, Y.C., Guest, J.R., Chou, L.M. & Todd, P.A. 2011. Vertical distribution and settlement competencies in broadcast spawning coral larvae: Implications for dispersal models. *Journal of Experimental Marine Biology and Ecology*, 409(1–2): 324–330.

Lim, M.K., Siew, W.L., Zhao, J., **Tay, Y.C.**, Ang, E. & Lehming, N. 2011. Galactose induction of the GAL1 gene requires conditional degradation of the Mig2 repressor. *Biochemical Journal*, **435**: 641–649.

Chou, L.M., Huang, D., Tun, K.P.P., Kwik, J.T.B., **Tay, Y.C.** & Seow, A.L. 2009. Temporal changes in reef community structure at Bintan Island (Indonesia) suggest need for integrated management. *Pacific Science*.

Tay, Y.C. 2009. A Rookie's reflections – thoughts from Singapore. *Reef Encounter*, **37**: 8.

Symposiums, Conferences & Workshops attended

| Year | Participation | Activities |
|----------------------|--|-------------------|
| 2016 (17 Jul) | Workshop on Molecular Evolution (Woodshole, USA) | Participant |
| 2015 (18 Nov) | 1st ASEAN Universities Workshop on Conservation Biology (Singapore) | Oral presentation |
| 2015 (27 May) | The Future of Marine Science Workshop (Singapore) | Oral presentation |
| 2012 (12-13 Jul) | 2012 Climate Change Conference (Seattle, USA) | Oral presentation |
| 2010 (20-24 Jun) | 2nd Asia-Pacific Coral Reef Symposium (Phuket, Thailand) | Oral presentation |
| 2009 (12-13 Oct) | 6 th Asia-Pacific Software Conference (organized by DHI Singapore) | Participant |
| 2009 (22-26 June) | 28 th Annual Meeting of the Willi Hennig Society (Singapore) | Oral presentation |
| 2009 (12-14 May) | International Symposium on Ocean Science, Technology and Policy (Manado, Indonesia) | Oral presentation |
| 2008 (7-11 July) | 11 th International Coral Reef Symposium (Fort Lauderdale, Florida, USA) | Oral presentation |
| 2007 (25-29 Sept) | International Workshop on Tropical Island Biodiversity: Across Land and Sea (Singapore) | Oral presentation |

Funding & Awards

- Research grant from the National Parks Board (Singapore), 2016-2018.
(*Marine population genomics, DNA barcoding and environmental DNA*)
- World Future Foundation PhD Prize in Environmental and Sustainability Research, 2013.
- Research grant from the National Parks Board (Singapore), 2008-2010.
(*Coral connectivity within Singapore*)
- National University of Singapore Research Scholarship, 2007-2010.
- Dean's List for meritorious performance in Sem 1, 2002/2003, and 2003/2004.

Teaching Experience

(Co)-supervision of various undergraduate and graduate research projects in the laboratory, and also training the students in lab and analytical skills. (Mar 2013 – present)

National University of Singapore – Part-time Teaching Assistant (Jan 2007 – Dec 2010)

- Conducted classes in small groups, mainly for practical and tutorial sessions of several undergraduate modules, to complement lecturer's teaching.
- Modules taught: Biodiversity, Ecology, Field Studies in Biodiversity, Biophysical Environment of Singapore

Key Relevant Skills

| | |
|--------------------|---|
| Laboratory skills: | Molecular (various DNA and RNA extraction methods, ddRADseq library preparation, DNA Sanger sequencing and fragment analysis, plasmid cloning, cryo-preservation of biological tissue samples) and cellular techniques (includes coral larvae rearing, tissue culture, bacterial and yeast work). |
| Field skills: | PADI-certified advanced SCUBA diver (Diver no. 0907AF9393). Also intertidal field experience. |
| Animal handling: | Trained in the Responsible Care and Use of Laboratory Animals. |
| Computer Skills: | Basic Bash commands in Unix shell, FastQC, CLC Genomics Workbench, PGDSpider, STACKS, STRUCTURE, fastStructure, Adegnet, diveRcity, PEAR, samtools, Migrate- <i>n</i> , FSTAT, GenePop, GeneMapper, GIMP, Adobe Illustrator. |

Language Skills & Interests

Language Fluency

- Fluent in written and spoken English and Chinese.

Interests

- Sketching (human portraits and animal characters) and watercolour.
- Trekking, SCUBA diving, cycling and yoga.