

Genetic population structure of the blue starfish (*Linckia laevigata*) in the Indo-Malay Archipelago based on microsatellites

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Population genetics is the study of naturally occurring genetic differences or polymorphism among organisms (Hartl, 2000). It can be approached by several genetic markers, such as allozymes, mitochondrial DNA (mtDNA) and microsatellites. Microsatellites are tandem repeats of 1-6 nucleotides found at high frequency in the nuclear genomes of most taxa (Selkoe & Toonen, 2006).

The blue starfish (*Linckia laevigata*) is a common benthic animal associated with coral reefs in the Indo-West Pacific. This species lives in shallow waters, lagoons, reefs flats and is distributed from western Indian Ocean to southeastern Polynesia (Clark & Rowe, 1971; Yamaguchi, 1977).

A previous study on the population genetic structure of *Linckia laevigata* in the Indo-Malay Archipelago based on sequences of the mitochondrial cytochrome oxidase subunit I gene (COI) revealed a genetic break between the Indian and Pacific Oceans, but panmixing on most parts of the archipelago (Kochzius *et al.*, 2009). The objectives of the current study are: (1) the characterisation of the genetic variability based on microsatellites, (2) to assess the genetic population structure of *L. laevigata* in the Indo-Malay Archipelago and (3) to compare the results to the previous study based on COI.

Tissue samples of *L. laevigata* were collected at 30 sites across the Indo-Malay Archipelago. Extraction was done with the Chelex method (Walsh *et al.*, 1991) and a multiplex PCR will be carried as described by Yasuda *et al.* (2012).

References

- Clark A.M. and F.W.E. Rowe. 1971. Monograph of shallow-water Indo-West Pacific echinoderms: i-vii, 1-238, pls 1-31. London, Trustees of the British Museum (Natural History).
- Hartl D.L. 2000. A primer of population genetics, Third Edition. Harvard University.
- Kochzius M., C. Seidel, J. Hauschild, S. Kirchhoff, P. Mester, I. Meyer-Wachsmuth, A. Nuryanto and J. Timm. 2009. Genetic population structures of the blue starfish *Linckia laevigata* and its gastropod ectoparasite *Thyca crystallina*. Marine Ecology Progress Series 396:211-219.
- Selkoe K.A. and R.J. Toonen. 2006. Microsatellites for ecologists: a practical guide to using and evaluating microsatellite markers. Ecology Letters 9(5):615-629.
- Walsh P.S., D.A. Metzger and R. Higushi. 1991. Chelex 100 as a medium for simple extraction of DNA for PCR-based typing from forensic material. Biotechniques 10:506-513.
- Yamaguchi M. 1977. Population structure, spawning, and growth of the coral reef asteroid *Linckia laevigata* (Linnaeus). Pacific Science 31(1):13-30.
- Yasuda N., C. Taquet, S. Nagai, G. Worheide and K. Nadaoka. 2012. Development of microsatellite loci in the common reef starfish *Linckia laevigata* and *Linckia multifora*. Ecological Research 27(6):1095-1097.