**Supplementary Table S1.** GenBank Blast results for sequences from the polyps in the present study

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Genes | Species\* | Genetic similarity | Accession numbers | Locality | Life stage originated | Reference |
| COI | *Eirene* sp. | / | MN604392 | Fujian, China (24.21˚N, 118.02˚E) | Polyp | **This study** |
|  | *Eirene lacteoides* | 100.00% | FJ418661 | Chinses coasts | Medusa | Zheng et al., 2016 (direct submission) |
|  | *Tima formosa* | 100.00% | JQ716166 | Changjiang River Estuary | Medusa | Zheng et al., 2014 |
|  | *Tima formosa* | 99.65% | JQ716167 | Changjiang River Estuary | Medusa | Zheng et al., 2014 |
|  | *Pelagia* sp. | 84.70% | KY655790 | Gulf of Oman, Iran | Medusa | Pourjomeh et al., 2018 |
|  | *Aequorea* sp. | 84.83% | MF742074 | Province: CCAL-California Upwelling Coastal | Medusa | Abboud et al., 2018 |
| 16S | *Eirene* sp. | / | MN595901 | Fujian, China (24.21˚N, 118.02˚E) | Polyp | **This study** |
|  | *Eirene lacteoides* | 99.37% | FJ418650 | Chinses coasts | Medusa | Zheng et al., 2016 (direct submission) |
|  | *Tima formosa* | 99.34% | JQ715996 | Jiaozhou Bay | Medusa | Zheng et al., 2014 |
|  | *Tima formosa* | 99.34% | JQ715995 | Jiaozhou Bay | Medusa | Zheng et al., 2014 |
|  | *Tima formosa* | 99.34% | JQ715994 | Jiaozhou Bay | Medusa | Zheng et al., 2014 |
|  | *Tima formosa* | 99.34% | JQ715993 | Jiaozhou Bay | Medusa | Zheng et al., 2014 |
| 18S | *Eirene* sp. | / | MN595899 | Fujian, China (24.21˚N, 118.02˚E) | Polyp | **This study** |
|  | *Eirene kambara* | 99.28% | KF962263 | Chinses coasts | Medusa | He et al., 2014 (direct submission) |
|  | *Aequorea aequorea* | 99.04% | AF358076 | Unknown | Medusa? | Collins, 2002 |
|  | *Aequorea* sp. | 99.10% | KY363972 | Torquary, England | Medusa | Schuchert et al., 2017 |
|  | *Aequorea australis* | 98.86% | KF962198 | Chinses coasts | Medusa | He et al., 2014 (direct submission) |
|  | *Aequorea victoria* | 98.86% | AF358077 | Unknown | Medusa? | Collins, 2002 |
| 28S | *Eirene* sp. | / | MN595902 | Fujian, China (24.21˚N, 118.02˚E) | Polyp | **This study** |
|  | *Eirene kambara* | 97.75% | KF962353 | Chinses coasts | Medusa | He et al., 2014 (direct submission) |
|  | *Aequorea aequorea* | 96.55% | EU305505 | Woods Hole, Massachusetts, USA | Medusa? | Cartwright et al., 2008 |
|  | *Eucheilota* sp. | 96.47% | KX665530 | Uruguay | Polyp | Cunha et al., 2017 |
|  | *Eucheilota* sp*.* | 96.47% | KX665531 | Uruguay | Polyp | Cunha et al., 2017 |
|  | *Octophialucium indicum* | 96.35% | EU272577 | Unknown | Medusa? | Evans et al., 2008 |

“\*” The first five GenBank Blast records with the highest sequence similarity were listed out

**Supplementary reference**

**Abboud SS, Gómez Daglio L and Dawson MN** (2018) A global estimate of genetic and geographic differentiation in macromedusae—implications for identifying the causes of jellyfish blooms. *Marine Ecology Progress Series* **591**, 199–216.

**Cartwright P, Evans NM, Dunn CW, Marques AC, Miglietta MP, SchuchertP and Collins AG** (2008) Phylogenetics of Hydroidolina (Hydrozoa: Cnidaria). *Journal of the Marine Biological Association of the UK* **88**, 1663–1672.

**Collins AG** (2002) Phylogeny of Medusozoa and the evolution of cnidarianlife cycles. *Journal of Evolutionary Biology* **15**, 418–432.

**Cunha AF, Collins AG and Marques AC** (2017) Phylogenetic relationships of Proboscoida Broch, 1910 (Cnidaria, Hydrozoa): Are traditional morphological diagnostic characters relevant for the delimitation of lineages at the species, genus, and family levels? *Molecular Phylogenetics and Evolution* **106**, 118–135.

**Evans NM, Lindner A, Raikova EV, Collins AG and Cartwright P** (2008) Phylogenetic placement of the enigmatic parasite, *Polypodium hydriforme*, within the Phylum Cnidaria. *BMC Evolutionary Biology* **8**, 139.

**Pourjomeh F, Reza SM, Rajabi-Maham H, Rezai H and Maghsoudlou E** (2018) New records of the scyphozoan medusae (Cnidaria: Scyphozoa) in the north of Gulf of Oman, Ira. *Marine Biodiversity* **48**, 2193–2202.

**Schuchert P, Hosia A and Leclère L** (2017) Identification of the polyp stage of three leptomedusa species using DNA barcoding. *Reviue Suisse de Zoologie* **124**, 167–182.

**Zheng L, He J, Lin Y, Cao W and Zhang W** (2014) 16S rRNA is a better choice than COI for DNA barcoding hydrozoans in the coastal waters of China. *Acta Oceanologica Sinica* **33**, 55–76.